CLF Protecting New England's Environment

CONSERVATION LAW FOUNDATION

October 31, 2008

Philip Giudice, Commissioner
Massachusetts Department of Energy Resources
100 Cambridge Street, Suite 1020
Boston, MA 02114

Re: Reply Comments – APS Regulations

Dear Commissioner Giudice:

The Conservation Law Foundation (CLF) appreciates this opportunity to submit reply comments in connection with DOER's implementation of Section 32 of the "Green Communities Act" with respect to establishing a new Alternative Energy Portfolio Standard (APS). Mass. G.L. c. 25A, s. 11F 1/2. CLF's reply comments are directed at issues raised by other stakeholders that we find to be of particular concern. We would be pleased to supply additional feedback if requested by DOER.

As with the revised RPS, the APS statute includes a number of environmental criteria that will need to be addressed for the first time, and there is a corresponding risk – especially in the context of adopting regulations on an "emergency" basis in advance of a full formal rulemaking proceeding – of opening the door too wide at the outset such that inequities (real or perceived) would be created by having to tighten eligibility requirements later. It would be far better to open up APS eligibility at this time only for those facilities that very clearly should qualify pursuant to the terms of the APS statute and the Commonwealth's new mandate to reduce greenhouse gas emissions as required by the Global Warming Solutions Act.

Combined Heat and Power (CHP):

The initial stakeholder comments reflect a remarkable degree of support for Combined Heat and Power (CHP) and widespread acknowledgement of the considerable environmental and economic advantages of this technology.

Several stakeholders aptly have cited the recent McKinsey report, "Reducing U.S. Greenhouse Gas Emissions: How Much at What Cost?: U.S. Greenhouse Gas Abatement Mapping Initiative, Executive Report" (December 2007) to highlight the favorable cost-to-benefit equation for CHP as an important technology for meeting energy needs while reducing greenhouse gas emissions. *See* McKinsey Report at p. 17, Exhibit B (referencing commercial and industrial

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CHP applications).[1] As noted by Pace Energy and Climate Center (PECC), CHP provides substantial opportunity to capture and put to productive use otherwise wasted thermal energy, reversing both significant energy losses and the thermal discharges that are so damaging to riverine and estuarine natural resources. Comments of The E Cubed Company, LLC, on behalf of itself and several other CHP stakeholders, also note system reliability, congestion relief and other benefits of CHP technology.

Given the demonstrated benefits of CHP, it is not surprising that the Green Communities Act includes a number of directives geared toward expanding deployment of CHP in order to reach the Act's general stated goal to "meet at least 25 per cent of the commonwealth's electric load, including both capacity and energy, by the year 2020 with demand side resources including: . . . demand response and generation that is located behind a customer's meter *including a combined heat and power system* with an annual efficiency of 60 per cent or greater with the goal of 80 per cent annual efficiency for combined heat and power systems by 2020." Green Communities Act, Section 116. In addition to the APS, other measures designed to promote CHP include modifications to the Renewable Energy Trust Fund statute to provide eligibility for micro-combined heat and power units smaller than 60 kilowatts (kW), Mass. G.L. c. 40J, s. 4E(f); creation of the HEAT loan program, a pilot program to assist consumers with the purchase of energy efficient "items" for residential home modifications including CHP units, Green Communities Act, Section 90; and a mandate for DOER to remove any impediments to the development of efficient, low-emissions distributed generation including CHP. *Id.*, Section 142.

While these CHP-related provisions in the Green Communities Act should help promote CHP, the APS presents a unique opportunity to maximize deployment of clean and efficient new CHP,[2] including commercial and industrial units as well as residential CHP, inclusive of micro-CHP.

Our preliminary analysis, based on information such as the KEMA report regarding CHP potential prepared for the Massachusetts Technology Collaborative,[3] suggests that incentives in the range of $10 - $30/MWh would be likely to deliver the most significant results in terms of promoting new CHP deployment, at least for commercial and industrial units. It less clear, based on the information available to us, what level of financial support is needed to promote residential deployment of CHP, including micro-CHP units. Comments submitted by E Cubed point out that smaller systems face particularly steep financial hurdles, but no specific data is supplied to inform any rulemaking on appropriate ACP levels. We therefore encourage DOER to actively solicit this information from micro-CHP stakeholders as part of the APS rulemaking process. DOER also should take into account other regulatory changes and incentives relevant to CHP so as not to set the APS incentive higher than necessary (i.e., it is possible – but not obvious – that the unique financial needs of micro-CHP can be met at least in part through other incentive programs).

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[1] Available at http://www.mckinsey.com/clientservice/ccsi/greenhousegas.asp.

[2] The Green Communities Act's goals expressly include a target of 20% *new* renewable and alternative generation by 2020. Limiting APS eligibility to new alternative energy generation would be consistent with the intent of the Act and would deliver the greatest benefits in terms of clean energy *additionality*.

[3] "Market Potential of Combined Heat and Power in Massachusetts," KEMA Inc., March 2008, available at www.masstech.org/dg/2008-03-MA-CHP-Market-KEMA.pdf.

While other forms of waste heat capture and use, beyond CHP, may indeed have environmental and economic benefits as suggested by some stakeholders, the APS requires performance in terms of kilowatt-hour sales of electricity from alternative energy generating sources. Alternative incentive mechanisms, not the APS, accordingly should be used to support those waste heat recovery systems that cannot reasonably be characterized as CHP.

In short, it is apparent that CHP offers extraordinary potential for advancing the clean energy objectives of the Green Communities Act and the Massachusetts Global Warming Solutions Act. We thus encourage DOER to design the APS regulations so as to provide sufficient incentives to maximize the potential for deployment of new clean CHP resources in residential, commercial and industrial contexts.

Flywheel Energy Storage:

Comments submitted by flywheel energy storage proponent Beacon Power Corporation underscore the positions taken in CLF's initial comments regarding the need to limit APS eligibility to flywheel energy storage units that are used to store and release electricity from truly clean energy resources, specifically RPS-eligible resources. Beacon Power admits that storage of electricity from natural gas power plants has, by its own calculation, only about one-fifth the carbon-dioxide "savings" of renewable energy. The difference is even more stark when one considers the prospect of deployment in conjunction with heavy fuel oil or coal-fired generation. Given the Massachusetts Global Warming Solutions Act's mandate to reduce greenhouse gas emissions across all sectors from 10-25% below 1990 levels by 2020 and 80% by 2050, the APS regulations must at a minimum assiduously guard against providing any incentive for increasing off-peak generation and storage of electricity from greenhouse gas-emitting generation resources.

While Beacon Power points to potential deployment of flywheel storage to capture energy produced by cycling power plant units (that presumably would otherwise be wasted), no data is supplied to support a determination that any financial incentive is needed. Carbon-reduction benefits are an important factor in determining what incentives are appropriate for specific technologies, but it is also important to consider the extent to which financial incentives are needed to overcome initial capital investment hurdles (else any incentives would comprise little more than a windfall). Further information is needed to understand what level of APS incentive would be needed to support deployment of flywheel energy storage, particularly when used to store electricity generated by renewable energy resources.

Gasification:

As discussed at the September 29, 2008 stakeholder meeting, DOER should defer APS eligibility for gasification projects and postpone rulemaking on related standards. This is the only reasonable course of action given that capture and permanent sequestration of carbon dioxide is a condition precedent to the qualification of any gasification technology under the APS that cannot yet be met. It would make no sense to craft a complex regulatory scheme at this time, on an emergency basis and without full rulemaking proceedings and formal public comment focused

on draft regulations, when gasification technologies are not (yet) able to clear fundamental threshold requirements for APS eligibility and are not expected to do so until after 2009. Even the leading gasification proponent weighing in here, GreatPoint Energy, agrees that no eligible gasification technology will be available in 2009[4] and that it does not expect to bring its own technology to the market until 2012 (or later).

CLF nonetheless wishes to address, for the record, some of the issues regarding gasification that have been raised by GreatPoint Energy and other stakeholders in their initial comments.

Standards for Injection and Permanent Sequestration of Carbon Dioxide

As noted in CLF's initial comments and at the stakeholder meeting, standards for the injection and storage of carbon dioxide and practices for monitoring and verifying the effectiveness of sequestration have not yet been developed. By postponing rulemakings regarding the appropriate standards for capture and sequestration, DOER will gain from the knowledge and experience being developed by the United States Environmental Protection Agency, the Department of Energy, the regional carbon sequestration partnerships, and other states where sequestration projects will be carried out. DOER will also benefit by reserving the proper emissions performance standards for gasification projects until the potential for effective carbon capture and sequestration has been established.

Setting standards now, based on limited and incomplete information, would not promote the objective of sending clear market signals and predictability, given that any such standards would in all likelihood need to be modified significantly based on impending developments with federal standards and R&D. Therefore, CLF urges DOER to delay implementation of the APS with respect to gasification until federal and other standards have been set for injection and storage of carbon dioxide and monitoring and verification protocols for sequestration have been developed and tested.

Of course, DOER cannot in the interim make a positive determination of *eligibility* for any gasification technologies; there is no authority to qualify gasification technologies without capture and sequestration.[5] The APS statute clearly states that gasification technologies may *only* qualify "with capture and permanent sequestration of carbon dioxide."

When DOER ultimately crafts the requisite carbon capture and storage regulations, the regulations should address the appropriateness (or lack thereof) of proposed carbon dioxide storage through means that are not specifically designed to meet the paramount objective of permanent storage, such as enhanced oil recovery operations ("EOR") that was flagged by GreatPoint Energy as a storage "solution" that it intends to pursue.[6] Monitoring and verification protocols have yet to be conclusively established even for sequestration projects whose primary

[4] "GreatPoint does not believe that there will be substantial supplies available in the immediate future. GreatPoint's current plans do not call for it to be able to supply gas to generators in ISO-NE until 2012." GreatPoint Energy comment letter at p. 2.

[5] GreatPoint Energy's comments seem to assume that DOER could postpone issuing regulations without postponing eligibility. GreatPoint Energy comment letter at p. 3.

[6] GreatPoint Energy comment letter at pp. 3-4.

purpose is permanent storage of carbon dioxide, much less for EOR operations. Diversion of carbon dioxide for EOR is also understood to be commercially viable without any support from mechanisms such as the APS.

GreatPoint Energy's comments suggest that capture and permanent sequestration of carbon dioxide will be easily verifiable through contractual arrangements or existing reporting systems such as the Generation Information System (GIS) used by the ISO-NE. This is not the case. Carbon capture and sequestration is still in its demonstration phase, and any serious attempt to achieve greenhouse gas reductions through this technology will require meaningful regulation, monitoring and oversight. At the appropriate time, implementation of the APS will require the Department to investigate and adopt standards for the monitoring and verification of permanent sequestration to ensure that any gasification technologies meet the statutory requirements of the APS.

Alternative Energy Generation Using Gasification

An additional reason to refrain from promulgating APS gasification regulations on an emergency basis at this time is that there appears to be a significant disconnect between what the APS statute actually says and the expectations of at least some stakeholders regarding what it should mean. The statute technically requires "electric generation… using gasification with permanent capture and sequestration of carbon dioxide," not electric generation using "gas from gasification" occurring at a remote location (far from New England), as GreatPoint Energy argues. GreatPoint Energy comment letter at p. 2. The statute thus does not, on its face, establish eligibility for combustion of gasified coal in a natural gas-fired power plant that itself has no gasification technology. "Gasification," including the extent to which it must be integrated with an eligible generating unit, must be defined.

Net Carbon Dioxide Emissions Rate for Gasification

DOER should also defer setting the net carbon dioxide emissions rate for eligible alternative energy generating units using gasification until it addresses the issue of carbon capture and sequestration. To be clear, this emissions performance standard for gasification technologies – which CLF preliminarily recommends to be set consistent with pending federal legislation at 285 lbs/MWh – must apply to net emissions inclusive of gasification *and* electric generation.

The statute requires DOER to set the emissions limit at no more than "the average emissions rate of existing natural gas plants in the commonwealth." Contrary to GreatPoint Energy's assertions, this language sets a ceiling not a floor. The statutory language requires DOER to do more than merely embrace the absolute limit; instead, a limit must be established that is "consistent with the commonwealth's environmental goals, including but not limited to, the reduction of greenhouse gas emissions." When setting this limit, DOER must consider the mandate contained in the Global Warming Solutions Act to reduce carbon dioxide emissions within the Commonwealth between 10-25% below 1990 levels by 2020 and 80% by 2050. In fact, if DOER were to set the emissions limit at the statutory ceiling, a coal gasification technology could qualify for the APS by simply displacing natural gas at a natural gas-fired power plant, even though there would be no carbon-dioxide or other emissions reduction benefit

and instead there would new risks of increased emissions given the questionable reliability of permanent carbon-dioxide sequestration. The APS was not intended to promote technologies that at best maintain the status quo and at their worst diminish the Commonwealth's ability to meet its climate goals.

Paper-Derived Fuels:

As noted in CLF's initial comments, it is very important to design the paper-derived fuels (PDF) APS regulations so as not to provide incentives for creating new sources of acute toxic air pollution. PDF proponent International Paper Products (IPP) itself points to the objectives of the RPS for guidance here, including the objective of "decreasing pollution." IPP Comment Letter at p. 1.

As an initial matter, it is essential that the regulations carefully define "paper-derived fuels." While IPP does not lay out a specific proposed definition, it is clear from IPP's written and verbal comments (at DOER's APS stakeholder meeting) that the so-called "PDF" product it currently produces contains substantial solid waste materials bearing no resemblance to paper; by way of just one example, IPP's representative identified *golf balls* as part of the fuel content. IPP notably acknowledges that "materials suitable for PDF. . . are historically disposed as solid waste." *Id.* at p.2. IPP's proposed implementation of APS regulations thus would be tantamount to providing a new (and unintended) incentive for waste-to-energy.[7] *Id.* IPP also admits that its PDF product contains significant quantities of "petroleum derived carbon." *Id.* at p. 3. It is incomprehensible that IPP argues use of PDF (as defined by it) will promote "recovery of valuable materials for recycling and re-use from disposal endpoints" (*Id.* at p. 4), when in fact the very loose standards it is attempting to promote would fail to protect against diversion of re-useable and recyclable materials to waste-to-energy operations having significant negative environmental impacts.

It is one thing for a private entity to engage in what appears to amount to Orwellian "doublespeak" by labeling heterogeneous solid waste fuel with benign terminology such as "paper-derived fuels" or even "Enviro-Fuelcubes." It would be far more objectionable and inappropriate for the Commonwealth to do the same by embracing IPP's apparent definition of PDF in the APS regulations. Instead, as suggested in CLF's initial comments, PDF should be defined as fuel comprised of *paper* (as the term "paper-derived fuel" suggests) that is not readily recyclable, with only *de minimis* amounts of non-paper materials. Importantly, DOER should define PDF so that it does *not* create incentives for other solid waste to be combusted in fossil fuel-fired power plants.[8] The regulations also should specify that a beneficial use determination (BUD) allowing for combustion of PDF is not sufficient in and of itself to demonstrate APS eligibility; the bar should be higher for eligibility to receive incentives.

[7] Since anecdotal evidence suggests that new power plants' warranties are not likely to allow for use of PDF in lieu of fossil fuels, the most prevalent uses for PDFs are likely to be in much older, dirtier power plants with fewer air pollution controls unless DOER sets strict emissions limits, as it should.

[8] Waste-to-energy facilities are separately addressed in Class II of the revised RPS, and gasification coupled with carbon capture and sequestion and other stringent emissions limits may ultimately become another avenue for which waste-to-energy incentives become available.

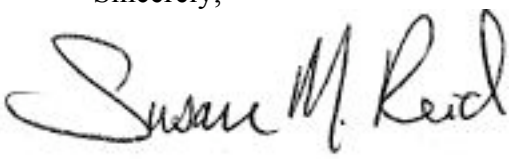
In addition, DOER should set strict air emissions criteria for combustion of PDF. Even if the fuel is required to be "clean" and truly comprised of paper, particulate matter (PM) and other likely emissions must be limited. Importantly, existing fossil fuel-fired facilities' operating permits must not be allowed to "set the standard for performance" as urged by IPP (at p. 3), nor would more stringent standards somehow "diminish the value of the APS" as asserted. To the contrary, strict emissions and fuel content limits would advance the clean energy objectives of the APS.

Conclusion

Thoughtfully implemented, the APS holds significant potential for advancing the clean energy and greenhouse gas emission reduction objectives of the Commonwealth as reflected in the Green Communities Act and Global Warming Solutions Act. At least initially, the statutorily required environmental performance criteria should be met by new CHP units and flywheel energy storage coupled with RPS-eligible generation. By contrast, gasification technology with carbon capture and sequestration will not soon be able to meet minimum eligibility requirements given the state of technological development – and the promulgation of APS regulations for gasification technology thus should not be undertaken on an emergency basis at this time.

Thank you, again, for the opportunity to provide these comments.

Sincerely,



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